

Remarks

Claims 1, 3-41, and 43-105 are pending in the application. Claims 2 and 42 were canceled in amendment A. Claims 3, 7, 15, and 99 have been amended. New dependent claims 100-106 have been added. No new matter has been added by virtue of this amendment. Reconsideration of the application as amended is requested.

Amendment After Final

Applicant has amended claim 99 to improve clarity of the claim and remove a phrase that was erroneously included. Additional dependent claims have been added, including claim 100 that more clearly provides the limit removed from claim 99. Applicant respectfully requests that the amendment be entered since if the independent claims are allowable these dependent claims would also be allowable. However, if the Examiner finds that the present amendment to claim 99 or the new dependent claims preclude entry of the amendment after final, then applicant would prefer to resubmit without the amendment to claim 99 and without the new claims.

Claim Objections

The Examiner objects to claims 3, 7, and 15 because of informalities. These claims have been amended to fix the informalities identified by the Examiner. In addition unclear language in claim 99 has been removed.

Claim Rejections—35 U.S.C. § 102(e)

The Examiner rejects claims 83-88 under 35 U.S.C. § 102(e), as being anticipated by Brann. Claim 83 provides:

83. A device for attaching to a living subject, comprising a first sensor, a processor, and a storage device, wherein said first sensor **comprises a device for determining a curvature of the spine**, wherein data from said first sensor is processed in said processor and stored in said storage device, wherein said first sensor, said processor and said storage device are part of the device for attaching to the living subject.

As described in claim 83, the present invention has a first sensor that "comprises a

device for determining a curvature of the spine." The device of Brann, by contrast is a "movement measurement device," as described in Brann's detailed description in column 3, lines 22 and 26. Brann's purpose is to monitor movements. Brann does not teach or suggest determining curvature of the spine (see col 2, lines 24-30 of Brann). Also Brann's figures, such as FIG. 5a concern movement, alarming when such movement exceeds a threshold.

Furthermore, while the device of Brann is used to detect movement, it is incapable of being used for determining curvature of the spine without further invention being added to the teachings of Brann. As described by Brann, his movement measuring device is an accelerometer that detects angle of movement. As provided in Brann, if there is no movement there is no detection. Brann's device, as applied in Brann, is capable only of detecting movement, that is, a **change in posture**.

Although an accelerometer, such as the accelerometer used by Brann, could also measure inclination, Brann does not teach or suggest using his accelerometer to detect inclination. Nor does he teach how to use an accelerometer that is configured to measure inclination to determine curvature of the spine. Further invention would be needed to provide this capability. For example, applicant believes that multiple accelerometers would be needed mounted on the spine to provide the various inclinations that determine its curvature. Applicant believes that a single accelerometer, as taught by Brann could only be used to determine the inclination of one point on the spine but could not be used to determine the curvature of the spine.

Nor does Brann teach or suggest a device capable of detecting various postures based on curvature of the spine, as described in claim 84, or detecting kyphotic curvature of the spine or lordotic curvature of the spine, as described in claim 85. Brann's description in Col 2, lines 42-62 makes clear that Brann is teaching a system to record, analyze, monitor, and detect **movement**.

Nor does Brann teach or suggest a device having a processor programmed to measure the time the subject has been in a posture with a kyphotic curvature of the spine or a lordotic curvature of the spine, as described in claim 86. Nor does Brann determine whether that time exceeds a preset value, and have the processor programmed to prompt the subject to move if that time exceeds the preset value, as also described in claim 86.

Claim Rejections--35 U.S.C. § 103(a)

The Examiner rejects claims 1, 3-21, 23-30, 32-41, 43-62, 64-71, 73-82, 92, 99 under 35 U.S.C. § 103(a), as being unpatentable over Hutchings in view of Sheldon.

Claim 1 provides:

1. A device for attaching to a living subject having a joint, comprising a first sensor, a second sensor, a processor, and a non-volatile storage device, said first sensor for attaching to a first body segment above the joint, said second sensor for attaching to a second body segment below the joint, wherein said first sensor and said second sensor each comprise a solid state inclination measuring device for determining inclination with respect to the gravity vector, wherein said inclination with respect to the gravity vector determined from said first sensor and from said second sensor is processed in said processor and stored in said non-volatile storage device for distinguishing lying, sitting, and standing positions, wherein said processor and said non-volatile storage device are part of the device for attaching to the living subject.

Claim 1 is clearly distinguished from the teachings of Hutchings and Sheldon since both references teach only a single sensor. Neither reference individually or in combination teaches or suggests providing two sensors across a joint from each other, as provided in claim 1.

Hutchings has display 18 with radio receiver 14 on the wrist and measuring system 10 on the foot. There is only one measuring system. Hutchings' device is for displaying distance a runner has traveled, speed, and height. Hutchings states that the sensor could be located in other areas, such as on the waist. But regardless of where placed, Hutchings has only one measuring system 10. The sensor or measuring system is only in one location in Hutchings; the wrist unit is only a display. Claim 1 is therefore distinguished from the teachings of Hutchings. Furthermore, because he only has one sensor, Hutchings cannot unambiguously determine posture, including distinguishing lying, sitting, and standing positions. There is no teaching or suggestion in Hutchings to provide sensors on different body segments across a joint, as provided in claim 1.

Similarly, Sheldon does not teach or suggest two sensors, one above and one below a joint. Everything is in one body segment. Sheldon has the sensors in the pacemaker itself. Sheldon implants the pacemaker holding the sensor in one spot in the body. In addition, Sheldon cannot accomplish what is described in claim 1, distinguishing lying, sitting, and standing positions.

Neither reference, individually or in combination provides the limits of claim 1. Therefore the rejection of claim 1, and claims dependent thereon, as being unpatentable over Hutchings in view of Sheldon under 35 U.S.C. § 103(a), has been traversed.

Claim 40 provides:

40. A device comprising a solid state sensor, a processor, a non-volatile storage

device, and a feedback mechanism wherein data from said sensor is processed in said processor to provide an output, wherein said output is stored in said non-volatile storage device as a function of time, and **wherein multiple points of said time dependent output stored** in said non-volatile storage device are processed in said processor, wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in response to said multiple points of time dependent output indicating inactivity, or activity of a joint during an interval of time that is less than a preset level of activity, or a range of motion of a joint during an interval of time that is less than a preset range of motion or vibration during an interval of time that is greater than a preset amount of vibration.

The Examiner has not pointed to any portion of Hutchings or Sheldon that provides the limits highlighted above. Applicant has reviewed the references in detail and has not found any teaching or suggestion in either reference to provide multiple points of time dependent output stored in non-volatile memory and feedback for inactivity or too small a level of activity, too small a range of motion or too much vibration during an interval of time. If they are in either reference, applicant would respectfully ask the Examiner to more clearly state where these teachings are to be found. Barring this showing, the rejection of claim 40, and claims dependent thereon, as being unpatentable over Hutchings in view of Sheldon under 35 U.S.C. § 103(a), has been traversed.

Claim 99 provides:

99. A device comprising a **first sensor** for placing on a first body segment, a **second sensor** for placing on a second body segment, a processor, a storage device, and a feedback mechanism wherein data from said first and said second sensors is processed in said processor to provide an output, wherein said output is stored in said storage device as a function of time, and **multiple points of said time dependent output stored** in said storage device are processed in said processor, wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in **response to said multiple points of time dependent output**.

The Examiner has not pointed to any portion of Hutchings or Sheldon that provides the limits highlighted above. Applicant has reviewed the references and has not found any teaching or suggestion in either reference to provide a **first sensor** for placing on a **first body segment** and a **second sensor** for placing on a **second body segment**. Nor has applicant found **multiple points of time dependent output** stored in a storage device and **feedback in response to the multiple points of time dependent output**. Applicant would respectfully ask the Examiner to more clearly indicate where these teachings are to be found. Barring such a showing, the rejection of claim 99 as being unpatentable over

Hutchings in view of Sheldon under 35 U.S.C. § 103(a), has been traversed.

The Examiner also rejects claims 22, 31, 63, 72, 93 under 35 U.S.C. § 103(a), as being unpatentable over Hutchings and Sheldon as applied above, and further in view of Brann.

The Examiner acknowledges that the limits in these claims are not disclosed in either Hutchings or Sheldon. However, the Examiner states that they are disclosed by Brann. However, as indicated herein applicant would respectfully ask the Examiner to consider that neither Brann nor Hutchings nor Sheldon, individually or in combination, teach or suggest the limits of claim 1 to provide the two sensors on opposite sides of a joint, and therefore the rejection of claims 22, 31, and 93 that are dependent on claim 1 have been traversed. Similarly, none of the references, either individually or in combination teach or suggest the limits of claim 40, to provide feedback "wherein said processor is programmed to direct said feedback mechanism to provide information or instruction in response to said **multiple points of time dependent output** indicating inactivity, or activity of a joint during an interval of time that is less than a **preset level of activity**, or a range of motion of a joint during an interval of time that is less than a **preset range of motion**, or vibration during an interval of time that is greater than a **preset amount of vibration**." Therefore the rejection of claims 63 and 72 under 35 U.S.C. § 103(a), as being unpatentable over Hutchings and Sheldon as applied above, and further in view of Brann. has been traversed.

The Examiner also rejects claims 89-91, 94-98 under 35 U.S.C. § 103(a), as being unpatentable over Brann in view of Sheldon. However, as described herein above, Brann does not teach or suggest the limits of claim 83 from which claims 89-91 depend. Nor does Sheldon teach or suggest the idea of a sensor for measuring curvature of the spine as provided in claim 83. Nor do any of the references teach or suggest providing an additional sensor, as provided in claim 89. All the references cited by the Examiner provide only a single sensor. There is no teaching or suggestion of providing sensors above and below a joint as provided in claim 90, in particular a hip joint, as provided in claim 91.

Similarly, claims 94-95 depend on claim 93 that depends on claim 1 which also provides a pair of sensors, one above and the other below a joint. None of the references provide such a configuration.

Similarly, claims 96-98 depend on claim 40, and none of the references teach or suggest multiple points of time dependent output stored in non-volatile memory and feedback for inactivity, too small a range of motion, or too much vibration during an interval of time.

Thus, the rejection of claims 89-91, 94-98 under 35 U.S.C. § 103(a), as being

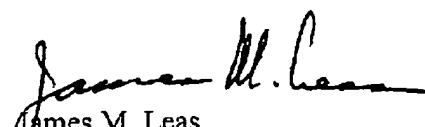
unpatentable over Brann in view of Sheldon has been traversed.

It is believed that the claims are in condition for allowance. Therefore, applicant respectfully requests favorable reconsideration. If there are any questions please call applicant's attorney at 802 864-1575.

Respectfully submitted,

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